

REMARKS

As a result of a previous requirement for restriction issued by the Examiner, claims 8-11 have been withdrawn from consideration by the Examiner as not being readable on the elected invention. Accordingly, claims 1-7 are presently under consideration in the present application.

Claims 4 and 7 have been objected to for the reasons set forth in paragraph 3 of the Examiner's Office Action letter. As the Examiner will note, claims 4 and 7 have been amended in an attempt to eliminate the informalities referred to by the Examiner and accordingly it is believed that this objection has been eliminated.

Claims 1-3 have been rejected by the Examiner under 35 USC 102(b) as being anticipated by Tarumi et al., U.S. Patent 5,837,774 or Chaouk et al., U.S. Patent 6,160,030 or under 35 USC 102(e) as being anticipated by Yamaguchi et al., U.S. Patent 6,673,887. Also, claims 4-7 are rejected under 35 USC 103(a) as being unpatentable over Tarumi et al., Yamaguchi et al. and Chaouk et al., in combination. These rejections are respectfully traversed.

The present invention is directed to a cross-linkable compound comprising a perfluoro polyether (PFPE) moiety which is ultimately terminated by an oxygen atom and bounded through a spacer attached to the oxygen atom with an ethylenically unsaturated group. The perfluoro polyether (PFPE) oil that can be used for making perfluoro polyether rubbers are particularly suitable for use in top layers of apparatus for transferring a toner image from an image-forming medium to a receiving medium, while preserving their non-sticky properties for a much longer period of time at elevated temperatures. According to the present invention, it has been surprisingly found that such suitable rubbers having good visco-elastic properties, including high elasticity and low compression set, can be obtained with the above cross-linkable compounds when the spacer extends over at least three atoms between the oxygen atom and the ethylenically unsaturated group. Thus, the distance between the oxygen atom which terminates the compound comprising the PFPE-moiety and the ethylenically unsaturated group involves at

least three atoms in a row. As a result, good monomers for providing suitable rubbers can be obtained.

As the Examiner will note, claim 1 has been amended to recite that the cross-linkable compound comprises a perfluoro polyether moiety which is ultimately terminated by an oxygen atom and bonded through a non-oxygen containing spacer attached to said oxygen atom with an ethylenically unsaturated group. It is believed that claim 1, as amended, overcomes the novelty rejection of claims 1-3 with respect to Tarumi et al., Chaouk et al., and Yamaguchi et al. based on the following discussion:

From page 1, lines 26-30 and page 2, lines 25-32 of the present application, it can be determined that any oxygen atom that is attached to the PFPE backbone via $-\text{[C(R}_x\text{)}_2\text{]}_q\text{-O-}$ (R_x may be the same or different and may be independently selected from H, F, alkyl, F-substituted alkyl, etc. with $q = 1, 2, 3, \dots$) must be regarded as the ultimately terminating oxygen atom originating from the hydroxyl-group of the hydroxy-terminated PFPE oil.

It is stated that linking groups between the PFPE moiety and the unsaturated group known in the prior art are esters, amides, urethanes and ethers (see page 1, lines 22-26) of the present application. Ethers are considered belonging to the PFPE backbone according to the previous argument (e.g., $-\text{CH}_2\text{-O-}$; the oxygen atom of the ether group is the ultimate terminating oxygen atom), while amides, urethanes, and esters have to be considered as part of the spacer (see page 2, lines 29-31) "... the "distance" between the oxygen atom which terminates the compound comprising the PFPE-moiety and the ethylenically unsaturated group ...). It is clear from the description that the linking groups as mentioned above are part of the prior art and are therefore not part of the present invention. All the linking groups known to the prior art contain at least one oxygen atom. This is the basis for amending claim 1 such that these linking groups, which are part of the spacer according to the definitions in the present invention, are excluded from the claimed subject matter. This position is further substantiated by referring to lines 4-16 on page 3 of the present application where Q contains the ultimately terminating oxygen atom of

the PFPE moiety (derived from hydroxy-terminating PFPE oil), and B contains at least three carbon atoms (spacer). "A" stands for the ethylenically unsaturated group that is either directly connected to the spacer or connected via a silicon atom. In view of claim 1, the silicon atom is then part of the spacer, making the spacer-chain heterogeneous (see also page 5, lines 12-32).

Since none of the references relied upon by the Examiner, that is since neither Tarumi et al., Chaouk et al, nor Yamaguchi et al. disclose structures with a non-oxygen containing spacer containing at least three atoms, it is believed that none of these references suggests the Applicants' inventive contribution.

In paragraph 6 of the Examiner's Office Action, the Examiner argues that the spacer group may be different and may contain some hetero atom other than carbon. However, it is believed that the Examiner cannot controvert the precise statement of claim 3 which recites that "the atoms of the spacer are carbon atoms." Since the length of the spacer is claimed in independent claim 1 and dependent claim 2 and claim 3 refers to claim 1 or claim 2, the expression "the atoms" in claim 3 can only be interpreted as "all atoms."

Concerning the Examiner's rejection of claims 4-7 as being obvious over Tarumi et al., Yamaguchi et al. and Chaouk et al., since none of these references even remotely suggest a perfluoro polyether moiety which is bonded through a non-oxygen containing spacer containing at least three atoms, and since this characteristic is an essential and distinguishing feature of the present invention as discussed on page 2, lines 25-32 of the present application, it is readily apparent that the present invention is clearly unobvious over the teachings of any of the references relied upon by the Examiner, either alone or in combination.

Accordingly, in view of the above amendments and remarks reconsideration of the rejections and allowance of all of the claims of the present application are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Joseph A. Kolasch Reg. No. 22,463

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at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

By


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